

Project Baseline Summary Report

Data Source: **EM CDB**

Operations/Field Office: **Oak Ridge**

Site Summary Level: **Oak Ridge Reservation**

Project **OR-231 / Y-12 Decontamination & Decommissioning**

Report Number: **GEN-01b**

Print Date: **3/9/2000**

HQ ID: **0091**

General Project Information

Project Description Narratives

Purpose, Scope, and Technical Approach:

Purpose: The primary objective is to provide D&D activities to protect human health, the environment, and DOE assets at the Y-12 Plant Building 9201-4 (Alpha 4). In addition, facility cleanup and decommissioning activities are planned to make facility available for future use.

The Alpha IV Facility is a 600,000 square foot transite covered structural steel and concrete facility with three floors and a subbasement located in the protected area of the Y-12 Site. Alpha IV began operating in 1945 as a uranium enrichment facility using the electromagnetic separation process for uranium separation and enrichment until 1947 when the electromagnetic process was abandoned. The building was not used again until 1953 when the installation of the column exchange (Calex) process began and within 15 months retrofits were completed and the system was in operation. The Calex process involved an electrochemical and solvent extraction method that required substantial quantities of mercury as a solvent agent to separate the lithium-6 from lithium-7 (in the form of lithium hydroxide). Production continued until 1962 when the equipment was drained of the majority of process materials (including mercury). However, all systems/components were not cleaned, and some recoverable quantities of mercury and lithium hydroxide remain in the equipment and lines. As a result airborne mercury is a constant hazard for workers in the facility and is a fugitive exhaust from the building contributing to ambient air mercury concentrations at the Y-12 Site.

This interim action would accomplish the D&D of the Alpha IV (Building 9201-4) Lithium Calex Process. The process will be removed, and the facility decontaminated and converted to warehouse status for future use. The project will remove and dispose of all process and process support system equipment, piping and electrical components, leaving the live utilities and the structure intact. Upon completion of the project no legacy waste will remain. Modifications to the floors and walls of the facility will be made as part of interim action.

D&D FACILITY MANAGEMENT

Facility management includes those activities supporting the business, programmatic, administrative aspects of this task. Included in management are all the utilities, which are under the custody of the Y-12 Plant operations (Facility Maintenance Organization - FMO) group. These utilities support other areas of the Y-12 Plant.

Technical Approach: Initial building characterization activities have been completed and samples analyzed. The major contaminant of concern is mercury. When the Record of Decision has been approved, a subcontract will be awarded for the D&D of the interior of the structure.

Project Status in FY 2006:

The Record of Decision will be approved. D&D activities will begin September 2004 with the preparation of an RFP soliciting a Firm Fix Price contract for the cleanup. Subsequent to contract award, the design will be issued and D&D will begin in June 2005. D&D will continue through December 2006. The draft Remedial Action Report will be started in August 2006.

Post-2006 Project Scope:

D&D will be completed in December 2006. The draft Remedial Action Report will be submitted to the regulators in March 2007. The project will be

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complete in September 2007.

Project End State

Project completion will result in the 9201-4 Building (Alpha 4) being available for unrestricted use.

Cost Baseline Comments:

The cost baseline equals the Life Cycle Baseline submitted in March 1999. The funding level has no contingency. The DOE EM Life Cycle Baseline that was recently issued in draft form from Bechtel Jacobs Company LLC Co. to DOE-ORO is the cost basis for the PBS. Following development of scope statements, several methods were used for creating the cost estimates in the Life Cycle Baseline: use of cost estimating models, use of existing estimates, use of unit-price estimates, and extrapolation estimates. Cost Estimating Models - Cost estimating models were developed for use on the majority of new Remedial Action, Surveillance & Maintenance, and Decontamination & Decommissioning projects. These innovative models were prepared using the government-accepted RACER cost database or were based on historical cost data for similar local work. These models were utilized when no other estimates exist, or when the project team needed to increase the quality of an existing estimate. Additionally, these models were developed to include the appropriate level of estimate detail and quality for a life cycle baseline estimate. Approximately forty-five subprojects were estimated using this modeling approach. No matter which estimating method was used, each estimate was reviewed for errors, omissions, and consistency in approach across the DOE-ORO EM Program.

Safety & Health Hazards:

The primary S&H hazards associated involved potential exposures to residual mercury, radioactive materials, and other residual process materials remaining within the building. Additional S&H hazards will be encountered during the physical decontamination of the building and the removal of surplus equipment.

All S&H hazards and mitigating requirements will be identified in the procurement, design, and D&D documentation for this project. The Statement of Work (SOW) and associated Request for Proposal (RFP) will identify the regulatory requirements with which the design and D&D shall comply, possibly including but not limited to S/RIDs, regulations, standards, DOE Orders, etc. It will describe known hazards and conditions of Alpha 4. The D&D work plan and accompanying documents (H&S plans, procedures, etc.) developed by the subcontractor(s) will identify all potential hazards and mitigating requirements.

Safety & Health Work Performance:

S&H resources will be required during each phase of the Alpha 4 D&D. During the procurement phase, S&H input will be required to define S&H requirements for the SOW and RFP. S&H support during the review of bids and vendors will be requested. A verified environmental and S&H compliance record will be a key consideration in the award of the contract. During the design phase, S&H input will be required to ensure adequate consideration of safety and environmental concerns for the proposed D&D approach. During the D&D phase, required S&H resource requirements will include but are not limited to work plan and H&S plan development, definition of S&H requirements, identification of hazards and controls, development of safety documentation and work procedures, training of personnel, readiness reviews, and oversight of D&D activities.

PBS Comments:

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Baseline Validation Narrative:

The Oak Ridge Operations Office Environmental Management Life Cycle Baseline (LCB) was submitted by the Managing and Integrating Contractor, Bechtel Jacobs Company LLC, to DOE-ORO on April 1, 1999. The final draft LCB will be submitted to DOE-ORO on June 1, 1999 after formal receipt and incorporation of comments. A validation of the baseline is in process using an independent contractor to DOE-ORO. The validation will be ongoing until complete and the final validation report is scheduled to be issued on June 25, 1999.

General PBS Information

Project Validated?

Date Validated:

Has Headquarters reviewed and approved project?

No

Date Project was Added: 3/10/1999

Baseline Submission Date: 7/1/1999

FEDPLAN Project? Yes

Drivers:	CERCLA	RCRA	DNFSB	AEA	UMTRCA	State	DOE Orders	Other
	Y	N	N	N	N	N	N	N

Project Identification Information

DOE Project Manager: Dave Adler

DOE Project Manager Phone Number: 423-576-4094

DOE Project Manager Fax Number: 423-576-5333

DOE Project Manager e-mail address: adlerdg@oro.doe.gov

Is this a High Visibility Project (Y/N):

Planning Section

Baseline Costs (in thousands of dollars)

1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006
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Baseline Costs (in thousands of dollars)

	1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006	
PBS Baseline (current year dollars)	31,891	5,548	37,439						0	0	0	0	60	7,906	23,925	
PBS Baseline (constant 1999 dollars)	27,719	4,698	32,417						0	0	0	0	54	6,979	20,686	
PBS EM Baseline (current year dollars)	31,891	5,548	37,439						0	0	0	0	60	7,906	23,925	
PBS EM Baseline (constant 1999 dollars)	27,719	4,698	32,417						0	0	0	0	54	6,979	20,686	
	2007	2008	2009	2010	2011- 2015	2016- 2020	2021- 2025	2026- 2030	2031- 2035	2036- 2040	2041- 2045	2046- 2050	2051- 2055	2056- 2060	2061- 2065	2066- 2070
PBS Baseline (current year dollars)	5,548	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS Baseline (constant 1999 dollars)	4,698	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS EM Baseline (current year dollars)	5,548	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS EM Baseline (constant 1999 dollars)	4,698	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Baseline Escalation Rates

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
			2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%

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2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%

Project Reconciliation

Project Completion Date Changes:

Previously Projected End Date of Project:

Current Projected End Date of Project: 9/30/2007

Explanation of Project Completion Date Difference (if applicable):

Project Cost Estimates (in thousands of dollars)

Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):

Actual 1997 Cost:

Actual 1998 Cost:

Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars):

0

Inflation Adjustment (2.7% to convert 1998 to 1999 dollars):

0

Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):

0

Project Cost Changes

Cost Adjustments Reconciliation Narratives

Cost Change Due to Scope Deletions (-):

Cost Reductions Due to Efficiencies (-):

Cost Associated with New Scope (+):

Cost Growth Associated with Scope Previously Reported (+):

Cost Reductions Due to Science & Technology Efficiencies (-):

Subtotal:

0

Additional Amount to Reconcile (+):

32,417

Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):

32,417

Milestones

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Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
Alpha-4 -D&D - SUBMIT DRAFT REMEDIAL ACTION REPORT TO REGS FOR REVIEW	OR231-001		3/14/2007								
Start Date for the Y-12 D&D PBS - PBS START DATE	OR231-002		10/1/1996								
End Date for the Y-12 D&D PBS - PBS END DATE	OR231-003		9/30/2007								
Y-12 Decontamination & Decommissioning Mission Completion	OR231-004		9/30/2070								

Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Alpha-4 -D&D - SUBMIT DRAFT REMEDIAL ACTION REPORT TO REGS FOR REVIEW	OR231-001										Alpha-4 -D&D
Start Date for the Y-12 D&D PBS - PBS START DATE	OR231-002			Y							Start Date for the Y-12 D&D PBS
End Date for the Y-12 D&D PBS - PBS END DATE	OR231-003				Y						End Date for the Y-12 D&D PBS
Y-12 Decontamination & Decommissioning Mission Completion	OR231-004					Y					

Performance Measure Metrics

Category/Subcategory	Units	1997-2006 Total	2007-2070 Total	1997-2070 Total	Actual Pre-1997	Planned 1997	Actual 1997	Planned 1998	Planned 1999	Planned 2000	Planned 2001	Planned 2002	Planned 2003	Planned 2006
Fac.														
Decom.- Assess.	NF	1.00	0.00	1.00										
Fac.														
Decom- Cleanup	NF	0.00	1.00	1.00										

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Performance Measure Metrics

Category/Subcategory	Units	1997-2006 Total	2007-2070 Total	1997-2070 Total	Actual Pre-1997	Planned 1997	Actual 1997	Planned 1998	Planned 1999	Planned 2000	Planned 2001	Planned 2002	Planned 2003	Planned 2004
Rem. Waste														
Disposed	M3	357.00	658.00	1,015.00							30.00			
Category/Subcategory	Units	Planned 2004	Planned 2005	Planned 2006	Planned 2007	Planned 2008	Planned 2009	Planned 2010	Planned 2011 - 2015	Planned 2016 - 2020	Planned 2021 - 2025	Planned 2026 - 2030	Planned 2031 - 2035	
Fac.														
Decom.- Assess.	NF			1.00										
Fac.														
Decom- Cleanup	NF				1.00									
Rem. Waste														
Disposed	M3			327.00	653.00	0.00			5.00					
Category/Subcategory	Units	Planned 2036 - 2040	Planned 2041 - 2045	Planned 2046 - 2050	Planned 2051 - 2055	Planned 2056 - 2060	Planned 2061 - 2035	Planned 2066 - 2070	Exceptions	Lifecycle Total				
Fac.														
Decom.- Assess.	NF								1.00	2.00				
Fac.														
Decom- Cleanup	NF								1.00	2.00				
Rem. Waste														
Disposed	M3									1,015.00				

Facility Decommissioning

Site Code	RSF ID	Change Flag	Description	Class/Subclass	Hazard	Plan. Assess. Year	Fore. Assess. Year	Actual Assess. Date	Plan. Deac. Year	Fore. Deac. Year	Actual Deac. Date	Plan. Comp. Year	Fore. Comp. Year	Actual Comp. Date	Acc. Year	No Action	Comp. Status	RAD
ORTN	0089		RAIMS Unit #929 \ Building	Buildings &	Non-Nuclear	2006	2006		1997			2007	2007			N		Y

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Facility Decommissioning

Site Code	RSF ID	Change Flag	Description	Class/Subclass	Hazard	Plan. Assess. Year	Fore. Assess. Year	Actual Assess. Date	Plan. Deac. Year	Fore. Deac. Year	Actual Deac. Date	Plan. Comp. Year	Fore. Comp. Year	Actual Comp. Date	Acc. Year	No Action	Comp. Status	RAD
			9201-4	Equipment\Other Buildings	Facility													
ORTN	0635		RAIMS Unit #546 \ Decontamination Facility (9419-1) {ORNL @ Y-12}	Buildings & Equipment\Other Buildings	Non-Nuclear Facility	1998			1997			1998				N		N

Technology Needs

Site Need Code: ORDD-01

Site Need Name: Improved Characterization of Equipment, Machinery, Fabricated Metals and Other Materials

Focus Area Work Package ID: DD-05

Focus Area Work Package: Material Recycle and Release

Focus Area: DDFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Cost

Technologies

	Cost Savings (in thousands of dollars)	Range of Estimate
Pipe Explorer (TM) System	0	
Portable X-Ray Fluorescence Spectrometer	0	
Ground Based Laser Induced Fluorescence Imaging	0	

Site Need Code: ORDD-02

Site Need Name: Improved Decontamination of Equipment, Machinery, Fabricated Metals, and Other Materials

Focus Area Work Package ID: DD-05

Focus Area Work Package: Material Recycle and Release

Focus Area: DDFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies

	Cost Savings (in thousands of dollars)	Range of Estimate
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Technology Needs

Soda Blasting Decontamination Process	0
Soft Media Blast Cleaning	0

Site Need Code: ORDD-03

Site Need Name: Improved Decontamination of Facility Concrete and Painted Surfaces

Focus Area Work Package ID: DD-05

Focus Area Work Package: Material Recycle and Release

Focus Area: DDFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Cost

Technologies

Concrete Spaller

Cost Savings (in thousands of dollars)

Range of Estimate

0

Site Need Code: ORDD-08

Site Need Name: Mercury Removal from Metal and Porous Surfaces

Focus Area Work Package ID:

Focus Area Work Package:

Focus Area:

Agree with Technology Link: N

Benefits (Cost, Risk Reduction, Both): Cost

Technologies

Mercury Removal Using General Electric Process

Cost Savings (in thousands of dollars)

Range of Estimate

0

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Technology Needs

Site Need Code: ORDD-09

Site Need Name: Improved Non-Thermal Cutting of Process Equipment

Focus Area Work Package ID: DD-05

Focus Area Work Package: Material Recycle and Release

Focus Area: DDFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Risk Reduction

Technologies

Cost Savings (in thousands of dollars)

Range of Estimate

High Speed Clamshell Pipe Cutter

0

Site Need Code: ORDD-10

Site Need Name: Improved Asbestos Disposition

Focus Area Work Package ID: DD-05

Focus Area Work Package: Material Recycle and Release

Focus Area: DDFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies

Cost Savings (in thousands of dollars)

Range of Estimate

Asbestos Pipe-Insulation Removal System

0

Thermal Conversion of Asbestos

0

Site Need Code: ORDD-12

Site Need Name: Improved Characterization of Buildings and Facilities

Focus Area Work Package ID: DD-07

Focus Area Work Package: Hot Cell Facilities and Laboratory Equipment D&D

Focus Area: DDFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Cost

Technologies

Cost Savings (in thousands of dollars)

Range of Estimate

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Technology Needs

Mobile Automated Characterization System	0
Gamma Cam (TM) Radiation Imaging System	0
Ground Based Laser Induced Fluorescence Imaging	0